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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,041	09/27/2004	Masayuki Nakamura	4670-0106PUS1	3224

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EXAMINER	
WU, IVES J	

ART UNIT	PAPER NUMBER
1713	

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/509,041	NAKAMURA ET AL.	
	Examiner	Art Unit	
	Ives Wu	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) *13-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-18* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/27/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1 through 12, drawn to nitrile group-containing copolymer rubber latex and its adhesive composition, classified in 524/555.

Group II, claim(s) 13 through 18, drawn to fiber member and method of producing the same, classified in 428/297.4.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Group II relates to fiber surface treatment with adhesive, its size of thickness and method of treatment which is different inventive entities of Group I – nitrile group-containing copolymer latex and adhesive composition.

During a telephone conversation with Attorney Marc Weiner on September 13, 2005 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-12. Affirmation of this election must be made by applicant in replying to this Office action. Claims 13-18 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(1). Claims 1, 2 and 5-12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Oyama et al (US005651995A).

Oyama et al disclose a nitrile group-containing highly saturated copolymer rubber which is a product obtained by hydrogenating the conjugated diene portion of an unsaturated nitrile-conjugated diene copolymer having Mooney viscosity of 15 to 200 and an iodine value less or equal to 80 (Abstract, line 1-10). The copolymer comprises acrylonitrile with content of 10 to 60 wt%, (Col. 5, line 56-57), a conjugated diene, (Col. 4, line 43-45), an alkylthio group with content at least 0.03 mole, (Col. 6, line 4-5), unsaturated carboxylic acid ester with content 1 to 80 wt%, ethylenically unsaturated carboxylic acid units with content in the range of 0.1 to 15 wt.%, (Col. 13, line 61- Col. 14, line 2). The breadth of the compositional distribution of the unsaturated nitrile is usually not large than 35, (Col. 4, line 30-32). Furthermore, Oyama et al disclose the adhesive composition comprising an aqueous emulsion of the above-mentioned nitrile group-containing highly saturated copolymer rubber and a resorcinol-formaldehyde resin with content in the range of 10 to 180 parts by weight, (Col. 14, line 65 to Col. 15, line 10) used for treating the fibrous material.

As to the α,β-ethylenically unsaturated nitrile monomer unit of 10 to 30 wt% in a latex of nitrile group-containing copolymer in **independent claim 1**, Oyama et al disclose the unsaturated nitrile-conjugated diene copolymer preferably containing 10 to 60 wt% of bound unsaturated nitrile units, Col. 4, line 24-26. As specific examples of the unsaturated nitrile, there can be mentioned acrylonitrile, Col. 4, line 41-42. The acrylonitrile is α,β-ethylenically unsaturated nitrile.

As to the properties of iodine value of 250 or less and a Mooney viscosity (ML_{1+4}, 100°C) of 10 to 120 in a latex of nitrile group-containing copolymer in **independent claim 1**, Oyama et al disclose that the nitrile group-containing highly saturated copolymer rubber has a Mooney viscosity of 15 to 200 and an iodine value not larger than 80, Col. 3, line 63-65.

As to the property of ΔT_g of 15 degree C or less between extrapolated glass transition initiation temperature (T_{ig}) and extrapolated glass transition end temperature (T_{eg}) measured by DSC in **independent claim 1**, furthermore, ΔT_g of 14 degree C or less in **dependent claim 2**, in view of substantially identical rubber copolymer composition disclosed by applicant and Oyama et al, it is the examiner's position to believe that the rubber copolymer of Oyama et al would inherently possess the ΔT_g of 15 degree C or less, 14 degree C or less between extrapolated glass

transition initiation temperature (T_{ig}) and extrapolated glass transition end temperature (T_{eg}) measured by DSC. Since USPTO does not have proper means to conduct the experiments, the burden now is shifted to the applicants to prove otherwise, *In re Best,* 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); *In re Fitzgerald,* 205 USPQ 594 (CCPA 1980).

As to the content of α,β-ethylenically unsaturated nitrile monomer unit in nitrile group-containing copolymer rubber to be 12 to 25 wt% in **dependent claim 5**, Oyama et al disclose the unsaturated nitrile-conjugated diene copolymer preferably containing 10 to 60 wt% of bound unsaturated nitrile units, Col. 4, line 24-26.

As to the iodine value of nitrile group-containing copolymer rubber to be 200 or less in **dependent claim 6**, Oyama et al disclose the nitrile-group containing highly saturated copolymer having an iodine value not larger than 80, Col. 3, line 63-65.

As to the average particle size of the nitrile group-containing copolymer from 50 to 150 μm in the **dependent claim 7**, it is well known the particle size distribution is controllable by nucleation process, choice and amount of surfactant, temperature and other reaction variables, and the use of seed emulsion polymerization, (Principles of Polymerization, 4th Ed, George Odian, page 366, 2nd paragraph), in absence of showing criticality of the record, the optimization value of particle size ranging from 50 to 150 μm in a known process is within an ordinary skill in the art. *In re Boesch,* 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980).

As to the resorcinol/formaldehyde resin in an adhesive treatment solution comprising the latex in **dependent claim 8**, Oyama et al disclose the adhesive composition including the aqueous emulsion of patentee's nitrile group-containing highly saturated copolymer rubber and a resorcinol-formaldehyde resin, Col. 14, line 66 – Col. 15, line 2.

As to the content of resorcinol/formaldehyde resin to be 3 to 60 parts by weight in **dependent claims 9 and 11**, Oyama et al disclose the amount of RF in the adhesive composition

to be usually in the range of 10 to 180 parts by weight based on 100 parts by weight of the solid content in the aqueous emulsion of the highly saturated copolymer rubber, Col. 15, line 5-9.

(2). As to the component of nitrile group-containing copolymer rubber in the adhesive composition in the **independent claim 10**, the disclosure of Oyama et al is incorporated herein by reference. The most subject matters of α,β-ethylenically unsaturated nitrile monomer content, iodine value, Mooney viscosity and ΔT_g in applicant's claim 10 has been recited in applicant's claim 1 and has been discussed in paragraph (1).

As to the content of water to be 1 wt% or less in the adhesive composition in the **dependent claim 12**, in the absence of showing criticality of the record, the optimization value of water content in a known process is within an ordinary skill in the art. *In re Boesch,* 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(3). Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oyama et al (US005651995A) in view of Kotsuji et al (WO0127199A1).

It is noted that U.S Patent No. 6548604 is an English equivalent patent to WO 01/27199 (published on 4/19/01). Accordingly, the following rejection over Kotsuji et al is based upon the content of US6548604.

As to the compositional distribution breath of each monomer unit in the nitrile group-containing copolymer rubber is 80 wt% or less in the **dependent claim 3**, Oyama et al **teach** the breath of compositional distribution of the unsaturated nitrile to be usually not larger than 35, Col. 4, line 27-28.

Oyama et al **do not teach** the breath of the compositional distribution for each monomer units to be 80 wt% or less.

However, Kotsuji et al **teach** in the nitrile group-containing highly saturated copolymer rubber of the patentee's invention, the monomer units (a), (b), (c) and (d) preferably have a compositional distribution breath of not greater than 20 wt%. Col. 4, line 61-65.

The reason of keeping the breath of compositional distribution for each monomer less than 20 wt% is that the ΔT_g is liable to become undesirably large if the compositional distribution for each monomer is too large, (Col. 4, line 67 – Col. 5, line 4). If the breath of compositional distribution for each monomer units is less than 20 wt%, it gives a crosslinked rubber product good cold resistance, oil resistance and dynamic properties, (Col. 1, line 53 - Col. 2,line 6).

Therefore, it would have been obvious at time of the invention was made to provide all monomers of nitrile group-containing rubber copolymer with breath of compositional distribution less than 20 wt% disclosed by Kotsuji et al, in the nitrile group-containing rubber copolymer of Oyama et al in order to obtain the desired properties of cold, oil resistance as aforementioned.

As to the limitation of **dependent claim 4**, in view of Kotsuji et al disclosure for the breath of compositional distribution for each monomer to be less than 20 wt% (Col. 4,line 61-65), it meets the limitation of this instant claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ives Wu whose telephone number is 571-272-4245. The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: Ives Wu
Art Unit: 1713

Date: September 14, 2005

DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700